

**PROCESSOR DESIGN FOR EXTENDED-PRECISION ARITHMETIC****ABSTRACT**

5           A processor for performing a multiply-add instruction on a multiplicand A, a multiplier B,  
and an addend C, to calculate a result D. The operands are double-precision floating point  
numbers and the result D is a canonical-form extended-precision floating point number having a  
high order component and a low order component. The processor is a fused multiply-add  
processor with a multiplier, an adder, a normalizer and a rounder. The post-adder data path, the  
10           normalizer and the rounder each have a data width sufficient to represent post-adder intermediate  
results to permit the high and low order words of a correctly-rounded result D to be computed.  
The mantissas of the extended-precision result D are provided such that the high order word  
mantissa is stored to double precision registers.

FOIb20147887660